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# **Jane Street and Mulgoa Road Infrastructure Upgrade Review of Environmental Factors**

Appendix E – Aboriginal Archaeological Survey  
Report

**October 2016**

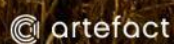


# Jane Street and Mulgoa Road Infrastructure Upgrade, Penrith:

Aboriginal Archaeological Survey  
Report (PACHCI Stage 2)

Report to Arup

September 2016



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## EXECUTIVE SUMMARY

Roads and Maritime Services (Roads and Maritime) proposes to undertake works to upgrade Mulgoa and Castlereagh Roads, and Jane and High Streets in Penrith. On behalf of Roads and Maritime, Arup is preparing a Review of Environmental Factors (REF) for the proposed development. The Preliminary Environmental Investigation found that the study area was disturbed, but that archaeological investigation of a nearby study area had found archaeological material in a highly disturbed context (NGH Environmental May 2014: 29).

In order to address the potential Aboriginal heritage impact of the proposed development Arup has commissioned Artefact Heritage to complete an Aboriginal archaeological survey report for the REF. The report has been prepared in accordance with the Office of Environment and Heritage (OEH) *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010* and Stage 2 of the Roads and Maritime *Procedure for Aboriginal cultural heritage consultation and investigation* (PACHCI). The potential historical heritage impact of the proposed development is addressed in a separate report (Artefact Heritage, in prep.).

## Results

The results of the investigation indicate that the immediate region of the study area would have been a focus of past Aboriginal occupation. This occupation may date back as far as the late Pleistocene period, over 10,000 years ago. The eastern part of the study area, being at a slightly higher elevation and less affected by flooding, may have been favoured over the western part.

There are no registered Aboriginal objects or Places within the study area, and the investigation did not result in the identification of any Aboriginal objects. It is likely that the historical development and occupation of the study area has resulted in some destruction of archaeological evidence of the past Aboriginal occupation. In one location, at the Castlereagh Road rail underpass, it appears that the upper soil profile has been entirely removed, and this location is considered to have no archaeological potential. This is likely also to be the case in the locations of the Civic Centre (east of Castlereagh Road, south of Jane Street), which is understood to have a basement; and the stormwater basin (west of Castlereagh Road, north of the Main Western Line), construction of which has involved deep excavation. It may also be the case in the vicinity of the rail bridge over Peachtree Creek, and the Mulgoa Road realignment, where it appears that deep excavation has been undertaken.

However, the soil profile in the locality including the study area is known to be particularly deep. It does not appear that the ground disturbance across the remainder of the study area has affected the full depth of the upper soil profile. It is therefore considered likely that archaeological remains will be present and an area of potential archaeological deposit (PAD) has been identified across much of the study area. These remains are likely to consist largely, or entirely, of stone artefacts. Densities are likely to be lower, and the context more disturbed, in the western part of the study area. The evidence could date back to the late Pleistocene period. Evidence from the later Holocene occupation of the study area is likely to have been subject to greater levels of historical disturbance, being higher in the profile.

The exact depth and extent of excavation required for the proposed development is not known. However, the information presently available indicates the following potential archaeological impact:

- Excavation in the immediate vicinity of the Castlereagh Road underpass is unlikely to result in archaeological impact.



- Excavation alongside the existing roads is likely to result in removal of archaeological deposits. The extent of impact will depend on the depth of excavation, but it has been assumed that only the upper part of the deposit (to approximately 1m) will be removed from these locations.
- Use of compound locations may result in damage to any archaeological deposits located within the upper soil profile, unless measures are taken to avoid ground disturbance.

## Recommendations

It is recommended that:

- Finalisation of the design of the proposed development should endeavour to minimise the extent of excavation required.
- Site compounds should be located and/or managed so as to avoid ground disturbance.
- Formal Aboriginal community consultation and an Aboriginal cultural heritage assessment should be undertaken, in accordance with:
  - Stage 3 of the *Procedure for Aboriginal cultural heritage consultation and investigation* (RMS 2011).
  - *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010).
  - *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011).
  - *Code of practice for archaeological investigation of Aboriginal objects in New South Wales* (DECCW 2010).
- The investigation undertaken for the assessment (Stage 3 PACHCI) should include archaeological test excavation, in accordance with the *Code of practice for archaeological investigations of Aboriginal objects in New South Wales* (DECCW 2010).

Depending on the results of the test excavation, it may be necessary to apply for an Aboriginal Heritage Impact Permit to allow harm to Aboriginal objects as a result of the development, and any associated mitigation measures.

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## 1.0 INTRODUCTION AND BACKGROUND

### 1.1 Introduction

Roads and Maritime Services (Roads and Maritime) proposes to undertake works to upgrade Mulgoa and Castlereagh Roads, and Jane and High Streets in Penrith. On behalf of Roads and Maritime, Arup is preparing a Review of Environmental Factors (REF) for the proposed development. The Preliminary Environmental Investigation identified two Aboriginal heritage items in the vicinity of the study area, and recommended assessment in accordance with the Roads and Maritime *Procedure for Aboriginal cultural heritage consultation and investigation* (PACHCI) (NGH Environmental May 2014: 29). In order to address the potential historical heritage impact of the proposed development Arup has commissioned Artefact Heritage to complete an Aboriginal Archaeological Survey Report for the REF.

### 1.2 Study area

The study area consists of Mulgoa and Castlereagh Roads, between Museum Drive in the north and Union Road in the south; a section of Jane Street extending approximately 130m to the east of the intersection with Castlereagh Road; and a section of High Street on either side of the Mulgoa Road intersection, approximately 350m in length; and a section of the Main Western Line to the west of Castlereagh Road, approximately 340m in length (Figure 1). The study area includes a 50m buffer around the road reserves and rail corridor and areas proposed for use as construction compounds. The footprint of the proposed works is smaller than the study area (see Section 6.1).

The study area is located in the Penrith Local Government Area; and in the Parishes of Castlereagh and Mulgoa, County of Cumberland; and within the Deerubbin Local Aboriginal Land Council (DLALC) boundaries.

### 1.3 Scope and objectives of study

This Aboriginal archaeological survey report complies with Stage 2 of the Roads and Maritime PACHCI and the OEH *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (referred to in this document as 'the OEH code of practice').

This report provides:

- A description of the proposal and the extent of the study area.
- A description of Aboriginal community involvement and Aboriginal consultation.
- Discussion of the environmental context of the study area.
- Discussion of the Aboriginal and historical context of the study area.
- A summary of the archaeological context of the local region including a discussion of previous archaeological work.
- Development of an archaeological predictive model.
- Description and results of the archaeological survey.
- Description and analysis of the identified Aboriginal sites within the study area.
- Development of a significance and impact assessment of the identified Aboriginal sites, addressing archaeological values.
- Development of management and mitigation measures.

- Recommendations relating to the further mitigation of potential impacts to identified sites.

## 1.4 Investigator and contributions

This report was prepared by Alyce Haast (Consultant), with the assistance of Fenella Atkinson, (Senior Consultant). Mapping was completed by Alyce Howard (Consultant). Dr Sandra Wallace (Principal) provided review, management input and advice. The survey was undertaken by Haast and Atkinson (Artefact Heritage) and Steve Randall (Deerubbin Local Aboriginal Land Council).

The assistance of the following is gratefully acknowledged:

- Kathryn Nation, Arup.
- Mark Lester, Roads and Maritime Services.

## 1.5 Aboriginal community involvement

Aboriginal consultation has been conducted by the Roads and Maritime Aboriginal cultural heritage advisor (ACHA) in accordance with Stage 2 of the PACHCI. The study area is within the boundary of Deerubbin Local Aboriginal Land Council (LALC). The consultation involved engagement of a representative of Deerubbin LALC to assist with the survey and provide a report. The report is included as Appendix 2.

Figure 1: Location of the study area.





## 1.6 Statutory requirements

### National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act), administered by the OEH, provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) under Section 90 of the Act, and for 'Aboriginal Places' (areas of cultural significance to the Aboriginal community) under Section 84.

The protection provided to Aboriginal objects applies irrespective of the level of their significance or issues of land tenure. However, areas are only gazetted as Aboriginal Places if the Minister is satisfied that sufficient evidence exists to demonstrate that the location was and/or is, of special significance to Aboriginal culture.

Impact to an Aboriginal object requires an Aboriginal Heritage Impact Permit (AHIP), issued under Section 90 of the Act by OEH. Various factors are considered by OEH in the AHIP application process, such as site significance, Aboriginal consultation requirements, ESD principles, project justification and consideration of alternatives.

As part of the administration of Part 6 of the Act OEH, regulatory guidelines on Aboriginal consultation are in place, which are outlined in the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (2010). Guidelines are also in place for the processes of due diligence as outlined in the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (2010) in accordance with the 2010 amendment to the Act.

There are no declared Aboriginal Places within the proposal areas. There are no Aboriginal objects recorded within the study area. However, the potential for the presence of Aboriginal objects has been identified.

### Heritage Act (1977)

*The Heritage Act 1977* is administered by the Department of Premier and Cabinet and protects the natural and cultural heritage of NSW. Generally this Act only pertains to Aboriginal Heritage if it is listed on the State Heritage Register, or subject to an interim heritage order.

There are no Aboriginal heritage items listed on the State Heritage Register within the study area.

### Aboriginal Land Rights Act (1983)

*The Aboriginal Land Rights Act 1983* is administered by the NSW Department of Human Services - Aboriginal Affairs. This Act established Aboriginal Land Councils (at State and Local levels). These bodies have a statutory obligation under the Act to; (a) take action to protect the culture and heritage of Aboriginal persons in the council's area, subject to any other law, and (b) promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area.

A search of the register of land claims has not been undertaken for the study area. However, the study area does not include any vacant Crown land, which is all that can be claimed under this Act.

### Native Title Act (1994)

*The Native Title Act 1994* was introduced to work in conjunction with the Commonwealth Native Title Act. Native Title claims, registers and Indigenous Land Use Agreements are administered under the Act.

There are no Native Title claims registered within the study area.

## 2.0 ENVIRONMENTAL CONTEXT

The following summary of the environmental context of the study area provides an overview of the resources and landforms that would have been available to the Aboriginal owners of the land. Environmental information is also useful in assessing whether or not any archaeological remains of this occupation are likely to have survived through to the present.

### 2.1 Geology and soils

The study area is within an area mapped as the Richmond Soil Landscape (Bannerman & Hazelton 2011: 88-91). The Richmond Soil Landscape is present on the higher Quaternary terraces of the Nepean and Georges Rivers. The topsoils (A horizon) of this landscape can be very deep; up to 1.4m near a terrace edge, and up to one metre at the back of the terrace. The topography is mainly flat, with terrace edges and levees providing low relief, up to 10m. Native vegetation would have consisted of open forest, with tree species including *Toona ciliata* (red cedar), *Ceratopetalum apetalum* (coachwood), *Melaleuca* spp. (paperbarks), and aquatic plants such as *Typha orientalis* (cumbungi), *Cyperus* spp. and *Phragmites australis* (common reed).

#### 2.1.1 Cranebrook Formation

The geology underlying the Richmond Soil Landscape consists of Quaternary alluvium (Bannerman & Hazelton 2011: 88). This particular area has been mapped as the Cranebrook Formation, consisting of gravel, sand, silt and clay (Geological Survey of NSW 1991). It has been suggested that the initial deposition of the Cranebrook formation took place prior to the last glacial maximum, across a braid channel that was subject to a drainage system with a larger discharge and greater stream power than the present Nepean channel (Nanson *et al* 1987: 72).

Degraded logs in the basal gravel have been radiocarbon dated to between 36,700 (+/- 3,300) BP and 41,700 (+/- 3,000, -2,200) years BP. Two thermoluminescence dates from the basal gravels provided dates of 42,100 (+/- 4,800) and 41,000 (+/- 4,500) years BP (Nanson *et al* 1987). The sandy silt overlying the basal gravels was subject to periodic stripping and reworking in places (Attenbrow 2002: 37). Nanson *et al* (1987: 74) present an example to the north of the current study area, where basal dates from one area of overburden ranged between 40,700 and 41,800 BP, whilst a basal date from another area of overburden was 13,700 (+/- 1000) years BP.

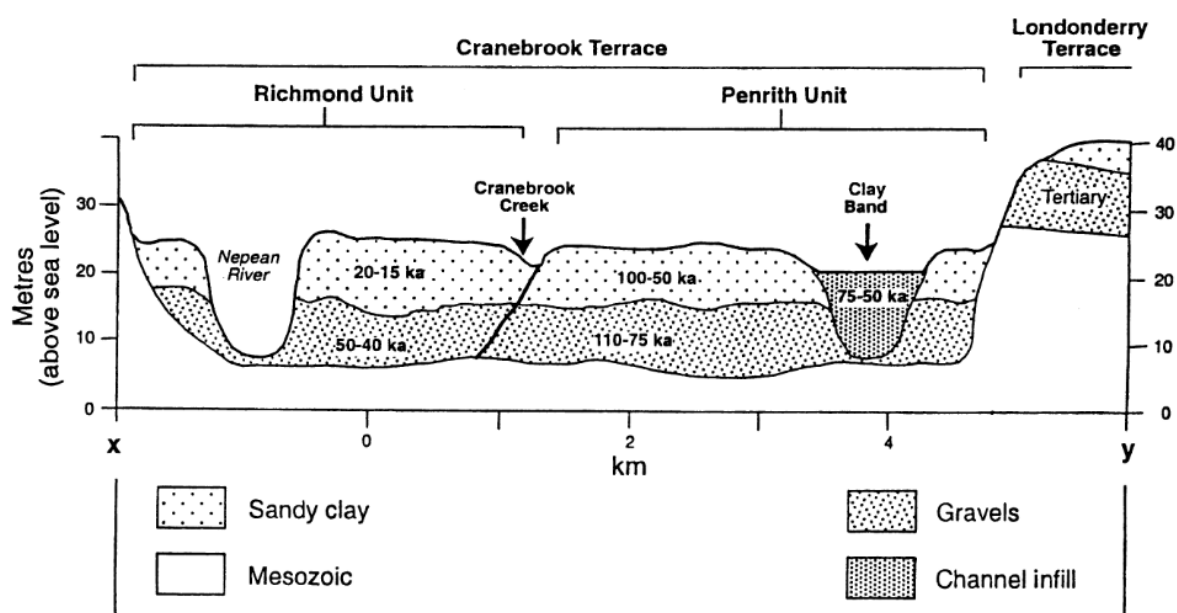
A review of previous studies of the Cranebrook Formation was undertaken in 2010 (Groundtruth Consulting 2010). The Cranebrook Formation is recognised as being composed of two formal units; an older Penrith Unit on the eastern side of Cranebrook Creek, and a younger Richmond Unit to the west; with each of these consisting of basal gravels and overburden fines (Figure 2). The basal gravels of the Penrith Unit are thought to have been deposited 130-80,000 years ago, and the upper fine sediment 100-50,000 years ago; the two deposits of the Richmond Unit have been dated to 65-33,000 years ago and 20-15,000 years ago (Groundtruth Consulting 2010: 9).

As a result of this interpretation of deposition, it was suggested that; 'whilst Aboriginal sites may occur anywhere across the surface of these units, the only sediment that might contain buried sites is the 'overburden' material in the Richmond Unit' (Groundtruth Consulting 2010: 10). In addition, the potential effects of historical flooding were noted. A succession of major floods in the mid-19<sup>th</sup> Century made permanent changes to the morphology, floodplain, and lowest terraces of the River (Groundtruth Consulting 2010; 11). This flooding may have resulted in burial or destruction of any Aboriginal sites that may have existed on the lower terraces and floodplain (Groundtruth Consulting 2010: 11).



Mapping of the boundary between the Richmond and Penrith Units has been undertaken only to the north of the present study area, within the Penrith Lakes Scheme project area. In this area, the boundary is considered to align with Cranebrook Creek (Stockton & Nanson 2004). Cranebrook Creek does not extend south as far as the study area, and it is therefore not known within which Unit it sits. However, the results of archaeological excavations in the vicinity suggest that the study area is within the Richmond Unit (see Section 3.3). A site immediately to the north, albeit on the opposite bank of Peachtree Creek, was found to be within the Richmond Unit; while the transition between the two Units was identified on a site to the south-east.

**Figure 2: Schematic cross-section of the two units of the Cranebrook Formation (Stockton & Nanson 2004: 60).**



### 2.1.2 Geotechnical investigation

Initial geotechnical testing has been undertaken for the project, and has included four boreholes, seven pavement cores and seven test pits (Geotechnical Science Unit July 2015).

The boreholes were drilled in the vicinity of the intersection of Castlereagh Road and the Main Western Line (Figure 3). The results indicate that the upper part of the natural soil profile has been entirely removed from this location, and replaced with fill, which overlies clay, gravel / sandy-gravel, and then shale (Table 1). These lower remaining natural deposits appear to correspond to the lower part of the Cranebrook Formation. The results suggest that excavation for the construction of the underpass was much more extensive than is apparent on the surface.

The pavement cores and test pits were excavated in pairs at seven locations along the roads within the study area (Figure 3). These encountered road surfaces and fill, to various depths, overlying topsoil in some cases, and alluvium in all cases (Table 2). The results suggest that levels of disturbance are higher along Castlereagh and Mulgoa Roads; in these locations fill was encountered to depths of 0.7 to 2.8m over alluvium, with no remnant topsoil apparent. It should, however, be noted that the fill, as described in the logs, could in some cases include disturbed natural deposits.

The extent of disturbance along Jane Street, High Street and the Great Western Highway appears to have been less. Adjacent to High Street and the Great Western Highway, topsoil was encountered at or near the ground surface, overlying alluvium. Adjacent to Jane Street, alluvium was encountered at

the ground surface. Testing was not undertaken in those parts of the study area that are further from the existing roads and railway, or in the vicinity of Peachtree Creek.

The results of the geotechnical investigation suggest that earthworks undertaken in the historical period have entirely removed the upper soil profile (ie the topsoil and alluvium overlying the clay and gravel) only from that part of the study area surrounding the Castlereagh Road rail underpass. Across the remainder of the study area, the alluvium of the Richmond Soil Landscape survives to various degrees. Topsoil remains in some areas. In others, the upper soil profile has been truncated, removing the topsoil and presumably the upper part of the underlying alluvial deposit to various degrees.

**Figure 3: The locations of the testing undertaken for the geotechnical investigation (Geotechnical Science Unit July 2015: fig.1).**



**Table 1: Summary of the results of the borehole drilling, surrounding the rail underpass (Geotechnical Science Unit July 2015: 10).**

Depth (m)	Material description
0 to 0.45 / 2.9	FILL: clay / sandy clay, sand or gravel. Red, brown, yellow or grey. Clays are medium to high plasticity and sand and gravel are fine to medium grained.
0.45 / 2.9 to 4.2	CLAY: yellow to orange brown or grey, low to high plasticity. Generally stiff to very stiff.
4.2 to 10.65 / 12.6	GRAVEL / SANDY GRAVEL: yellow brown, fine to coarse grained, sub-angular to sub-rounded with some cobbles, dense to very dense. Fine to medium sand lenses observed within formation.
10.65 / 12.6 +	SHALE: grey and dark grey, moderately weathered, medium to low strength.

**Table 2: Summary of the results of the pavement coring and test pitting (Geotechnical Science Unit July 2015: 11-15).**

Depth (m)	Material	Depth (m)	Material	Depth (m)	Material	Depth (m)	Material
Castlereagh Road (northbound)		Jane Street		Mulgoa Road (north of GWH)		High Street	
0 to 0.29 (within road)	Concrete pavement: wearing course / base and sub-base course	0 to 0.27 (within road)	Asphaltic concrete pavement: wearing course over AC14	0 to 0.27 (within road)	Concrete pavement: base and sub-base courses	0 to 0.15 (within road)	Concrete pavement: wearing course over concrete base
0.29 to 0.44 (within road)	Select fill: gravel with clay	0 / 0.27 to 1.4	Alluvium: sand / silty sand, fine to medium, red to red-brown	0.27 to 0.5 (within road)	Select fill: gravel, fine grained, grey and dark grey	0 to 0.25	Fill over topsoil: Silty sand, fine to medium grained, red / grey-brown
0 to c. 2.8	Fill: sandy / silty clay with trace of gravel, grey, brown, yellow or red- brown	1.4 +	Alluvium: gravel, fine to medium, brown and grey	0 to 0.7 / 1.2	Topsoil over fill: silty gravelly sand, fine to coarse dark brown or red brown with some gravel	0.15 / 0.25 to 1.5 +	Alluvium: silty sand, fine grained, red / red brown
2.8 +	Alluvium: gravel, grey- brown, fine to medium			0.7 to 1.95 +	Alluvium: sand / silty sand, fine grained, yellow / pale brown- grey		
Castlereagh Road (southbound)				Mulgoa Road (south of GWH)		Great Western Highway	
0 to 0.27 (within road)	Asphaltic concrete pavement: wearing course and base course			0 to 0.41 (within road)	Concrete pavement: base and sub-base courses	0 to 0.4 (within road)	Asphaltic concrete: wearing course, AC7, AC14, concrete base course

Depth (m)	Material	Depth (m)	Material	Depth (m)	Material	Depth (m)	Material
0.27 to 0.7 (within road)	Asphaltic concrete over select fill: gravel and silt, dark grey possibly lime stabilised			0.41 to 1 (within road)	Fill: clay with sand, medium to high plasticity, dark grey and grey with shale fragments	0 to 0.3	Topsoil: sandy silt / silty sand, fine to medium, dark brown
0 to 0.55	Fill: clayey sand / sandy clay red-brown and grey brown with gravel			0 to 0.8	Topsoil over fill: variable, comprising sand, cobbles and gravelly clay	0.3 / 0.4 to 2.45 +	Alluvium: sandy clay over silty sand / sand, clay is medium high plasticity, sand fine grained, red and red-brown, loose.
0.55 to 0.95	Old road pavement: asphaltic concrete over select fill comprising silty sandy gravel, fine to coarse			0.8 / 1 to 1.95 +	Alluvium: silty clay, silty sand, medium to high plasticity clay / fine sand, yellow brown and red		
0.7 / 0.95 to 1.6 +	Alluvium: sandy clay / clay with sand, low to medium plasticity, red-brown						



## 2.2 Landforms and hydrology

At its closest point, the study area is approximately 260m from the Nepean River. The Hawkesbury / Nepean River is the major watercourse of the western Cumberland Plain. The headwaters of the river rise near Robertson, and the river flows north past Penrith. To the north of Penrith, at the confluence with the Grose River, the Nepean becomes the Hawkesbury River. The flow of the river has been altered by the construction of weirs and dams along its length, to supply agricultural and drinking water and to control flooding. The study area includes a small stretch of Peachtree Creek, a high order (possibly fourth) tributary of the Nepean. As with the River, the nature of the flow and course of Peachtree Creek has been significantly affected by historical development. An open drainage channel ran through the northern part of the study area, and may represent a modified version of a watercourse (Figure 7).

The proximity of permanent freshwater is known to indicate the likely presence of Aboriginal objects, as past Aboriginal occupation was focussed on these locations of rich natural resources. There are a number of significant archaeological sites along the Hawkesbury / Nepean in particular. Some of these date back to the late Pleistocene period, and suggested that stretches of the River may have formed a refuge during the harsh climatic conditions of the Last Glacial Maximum (eg AHMS Feb 2013).

### 2.2.1 Cumberland Plain

White and McDonald (2010) developed a spatial analysis of Aboriginal sites, based on the results of extensive fieldwork undertaken in the northwest Cumberland Plain in advance of the development of the Rouse Hill Development Area. The distribution of sites was analysed in relation to landform and to the distance to freshwater. The following statements were made (White & McDonald 2010:36):

- In proximity to first order creek lines, archaeological evidence of past Aboriginal peoples will be limited and be representative of background scatter.
- Within the reaches of second order creek lines, archaeological evidence will again be representative of background scatter and will likely consist of one-off camp locations and / or isolated events;
- Within the reaches of third order creeks, archaeological evidence will consist of repeated occupation by small groups of people. Archaeological expressions will likely consist of knapping floors and evidence of repeated use over time;
- Along major fourth order creek lines archaeological expressions will consist of continued and repeated use by past Aboriginal peoples and may include stratified deposits.

This stream order model identifies that the confluences of creek lines across the Cumberland Plain will likely have evidence of a foci of activity with stratified deposits (White & McDonald 2010: 33). It was found that artefacts were most likely within 50-100 metres of higher (fourth) order streams, within 50 metres of second order streams, and that artefact distribution around first order streams was not significantly affected by distance from the watercourse (White & McDonald 2010: 33).

The study also found that artefact densities were most likely to be greatest on terraces and lower slopes within 100 metres of freshwater resources (White & McDonald 2010). The predictive model identified that ridgelines and crests located between drainage lines will contain archaeological evidence though usually representative of background scatter similar to that identified for first and/or second order creek lines (White & McDonald 2010).



The present study area includes a small section of the higher order Peachtree Creek, and may also include a stretch of a first order tributary of the Creek (now heavily modified). In addition, the predominant landform of the study area can be described as a terrace. The results of the White and McDonald study suggest that high densities of artefacts, representing continued and repeated use, can be expected within the study area, within 100m of Peachtree Creek. Lower densities, or a background scatter representing less intensive occupation, would be expected across the remainder of the study area. Higher densities would again be expected near the confluence of Peachtree Creek with the tributary.

However, it is unlikely that the results from the Rouse Hill Development Area are directly applicable to the study area. There are a number of environmental conditions that are substantially different, the principal two being the proximity of the Nepean River and the presence of the deep deposits of the Cranebrook Formation. These factors are likely to have had a significant influence on the nature of past Aboriginal occupation of the local area, and to have affected survival of associated archaeological remains.

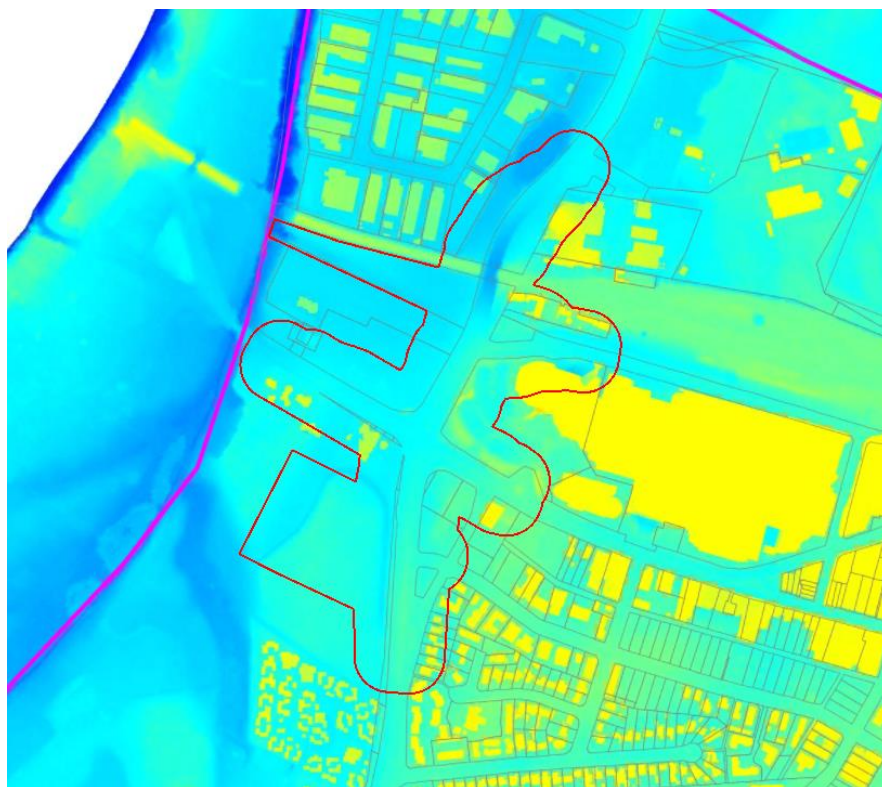
### 2.2.2 Flooding

The gravels and soils of the Cranebrook Formation, and overlying Richmond Soil Landscape have been laid down largely by the Nepean River, but the action of the water is likely also to have involved intermittent stripping of the upper sandy deposit (Attenbrow 2002: 37). This is significant, with regard to archaeological potential, for two main reasons. The first is that scouring of deposits would have involved removal of archaeological materials within these deposits. The second is that past Aboriginal occupation is less likely to have been focussed on areas subject to flooding.

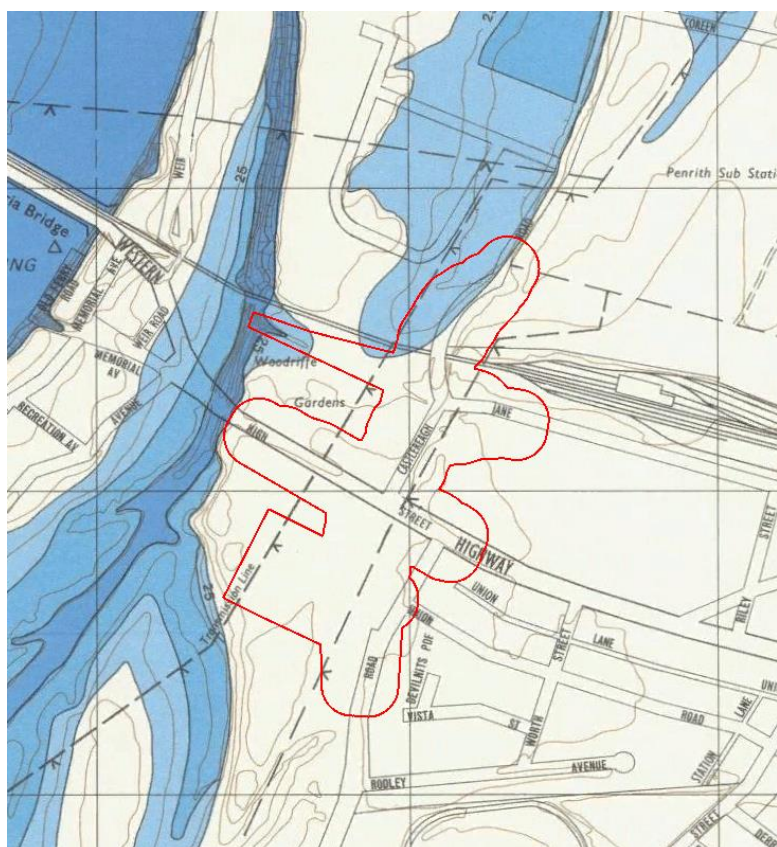
Previous investigations along the Hawkesbury / Nepean River suggest that the 1:100 year flood level can be used as a rough predictive guide. Work undertaken by AHMS at Pitt Town identified an association between artefact density and location relative to the 1:100 year flood level (2006: 53). The 1:100 year flood level at Pitt Town was 17.3m AHD, with test excavation results demonstrating significantly lower artefact densities below that level (1.4 artefacts per m<sup>3</sup>), whilst above that level the average density was 29.84/m<sup>3</sup>. Excavations at Windsor indicated that deposits below the 1:100 year flood level had been subject to substantially higher levels of disturbance than higher deposits (KNC 2012).

The 1:100 year flood level at Victoria Bridge, to the west of the study area is 26.1m AHD. Elevation mapping indicates that the study area to the west of Castlereagh Road and to the north of the Main Western Line is largely below this level, and to the east is slightly above (Figure 4). This suggests that any archaeological deposits in the lower area to the west are likely to have been subject to disturbance, and may have been removed, by the action of the river in flood. Flood mapping suggests that only small sections of the study area are affected, and that the urban development has been a key influence, although the areas affected do appear to be greater to the west of Castlereagh Road.

**Figure 4:** Elevation mapping, with the study area outlined in red (Cardno July 2015: fig. 6.2).



**Figure 5:** Flood mapping from 1981 (NSW Water Resources Commission, Penrith flood inundation map, National Library of Australia, MAP G8971.C32 svar).



**Figure 6: Mapping of areas affected by the 100 year Average Recurrence Interval (ARI), with the study area outlined in red (Cardno July 2015).**



## 2.3 Historical land-use

The study area is part of a property granted to Daniel Woodriff in 1804. A section of the Great Western Road (now followed by the High Street alignment) was laid out through the grant in 1811. Castlereagh Road and Mulgoa Road also date to the early nineteenth century. Development adjacent to these routes was initially sparse, consisting of gardens and orchards, along with a gravel pit beside Peachtree Creek. Subsequent development was concentrated along High Street. In the late 1860s, the Main Western Line was extended west from Penrith, running through the northern part of the study area, and including a bridge over Peachtree Creek.

Subsequent development within the study area has included excavation of a drainage channel, construction of Jane Street, duplication of the railway line, and widening and realignment of the roads. The northern section of Castlereagh Road was realigned in order to create an underpass, allowing the road to cross under the rail line. The northern section of Mulgoa Road was realigned to connect to the Castlereagh Road intersection with High Street. Development alongside the roads, within the study area, has included light industry, paved carparks, the Civic Centre, tennis courts, a public park, and housing.

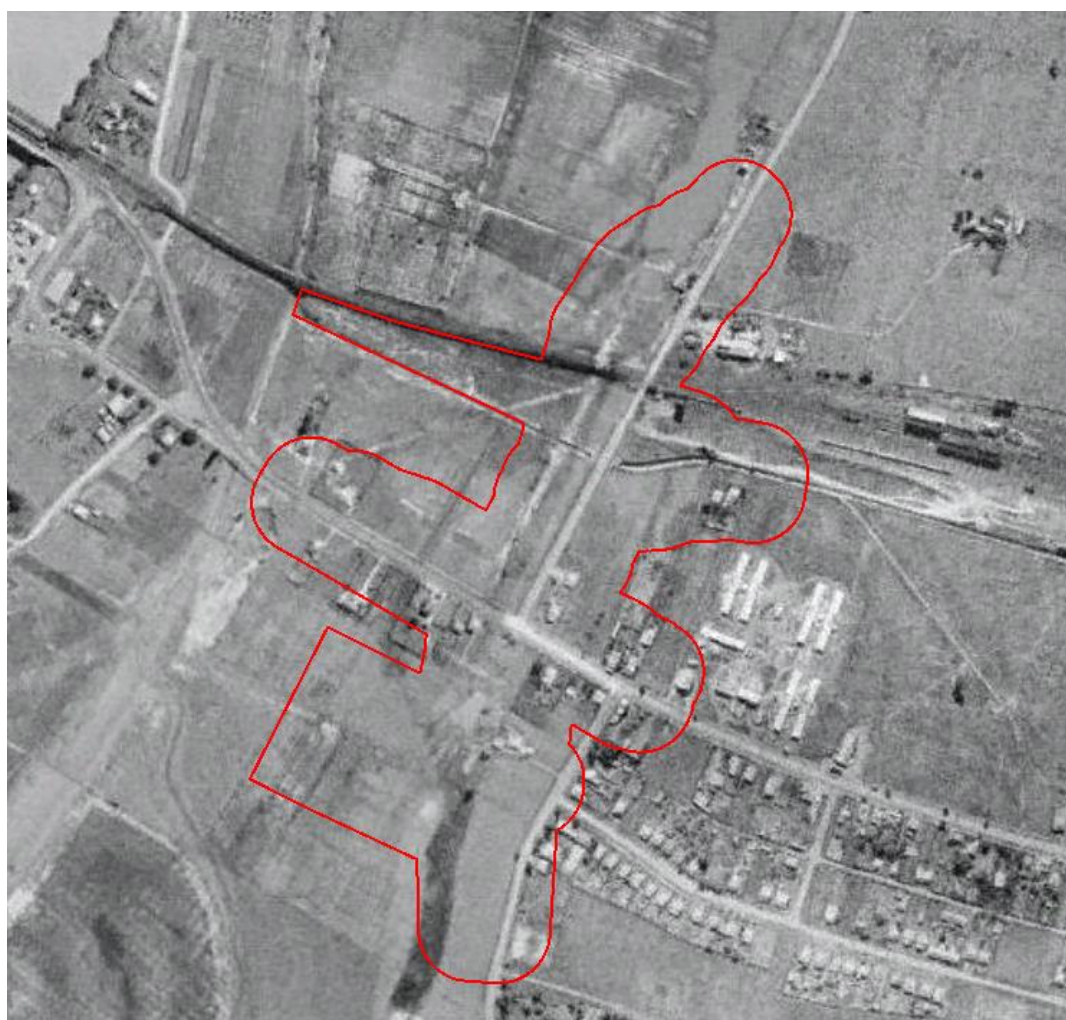
Historical images indicate that development of the study area has remained relatively sparse, with open areas surviving through to the present (Figure 7 and Figure 8). However, the images also indicate that this development has involved substantial earthworks. These have included excavation for drainage and the construction of the Castlereagh Road underpass, and introduction of fill for the railway embankment and the tennis courts.



The known historical development is likely to have resulted in the removal of site types such as culturally modified trees, stone arrangements, and earthen features such as ceremonial rings and mounds. The development impact on any surface and subsurface artefact deposits that may have been present depends on the extent and depth of excavation.

There has been ground disturbance across the whole of the study area, although the depth of disturbance is likely to be variable. The upper part of the soil profile is likely to have been entirely removed within the footprint of the current roads, areas of deep excavation such as subsurface services and the drainage channel, and discrete features including buildings and carparks. These areas of deep excavation include the Castlereagh Road rail underpass, the Civic Centre, and the Mulgoa Road realignment (Figure 8 and Figure 9). The upper profile may have been retained, at least in part, in areas such as Woodriff Gardens, where excavation has been less substantial, and the tennis courts, where fill has been introduced. The lower soil profile is likely to remain across much of the remainder of the study area, as these soils are particularly deep (see Section 2.1).

**Figure 7: 1943 aerial showing the study area (LPI SIXMaps).**

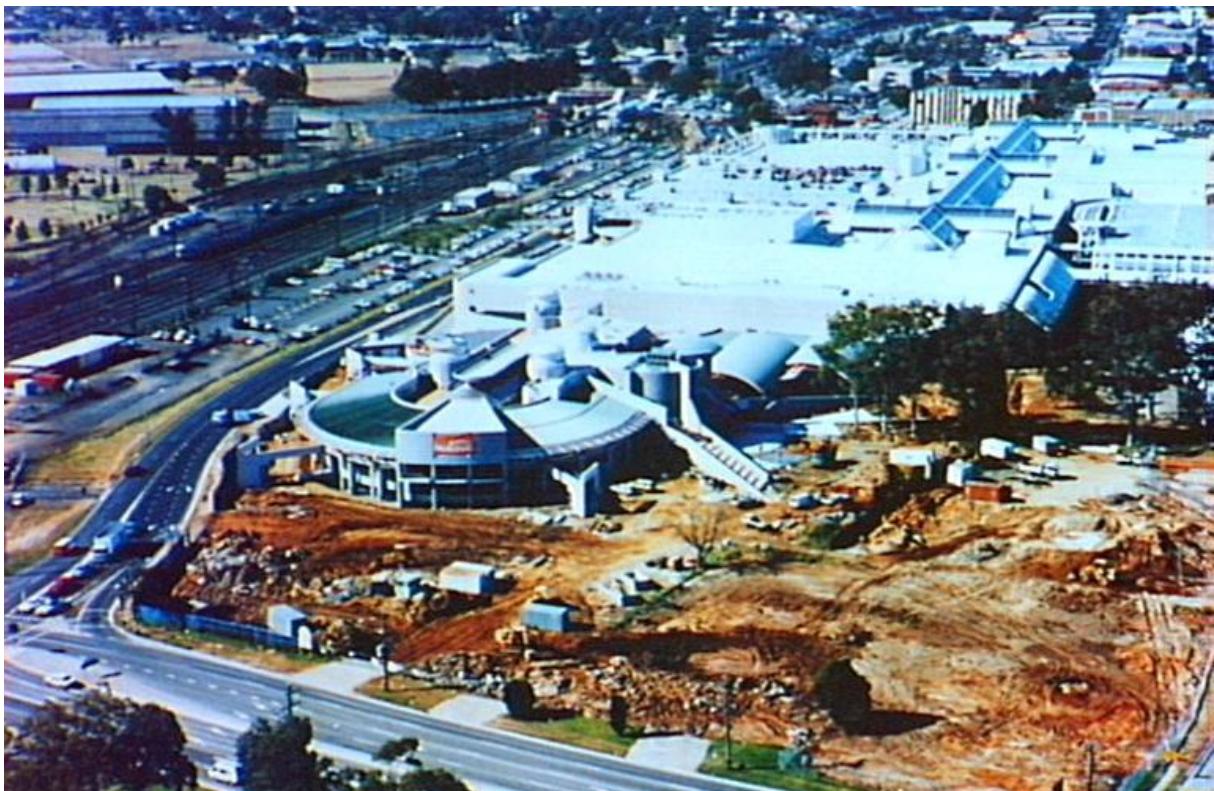




**Figure 8:** 1986 aerial photograph showing the realignment of the Mulgoa Road intersection with High Street (Penrith in Pictures).



**Figure 9:** A c.1992 image showing earthworks during the construction of the Penrith Civic Centre (Penrith City Library, Penrith in Pictures, NC0/NC00072).



## 3.0 ABORIGINAL HISTORICAL AND ARCHAEOLOGICAL CONTEXT

### 3.1 Aboriginal ethno-historic context

Prior to the appropriation of their land by Europeans, Aboriginal people lived in small family or clan groups that were associated with particular territories or places. It seems that territorial boundaries were fairly fluid, although details are not known. The language group spoken on the Cumberland Plain is known as Darug (Dharruk – alternative spelling). This term was used for the first time in 1900 (Matthews & Everitt), as before the late 1800s language groups or dialects were not discussed in the literature (Attenbrow 2010:31). The Darug language group is thought to have extended from Appin in the south to the Hawkesbury River, west of the Georges River, Parramatta, the Lane Cove River and to Berowra Creek (Attenbrow 2010:34). This area was home to a number of different clan groups throughout the Cumberland Plain. It is thought that the Aboriginal people living in the Penrith area in the early 19th century belonged to the Darug language group (Kohen 1986: 3).

The British initially thought that Aboriginal people did not live inland, but were confined to the coast taking advantage of the abundant marine resources available. The first major expeditions into the interior did not witness any Aboriginal people, but evidence of their existence was noted. In 1789 Captain Watkin Tench led an expedition to the Nepean River (Tench 1789). He noted that;

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*Traces of the natives appeared at every step, sometimes in their hunting huts which consist of nothing more than a large piece of bark bent in the middle and opened at both ends, exactly resembling two cards set up to form an acute angle; sometimes in marks on trees which they had climbed; or in squirrel-traps....We also met with two old damaged canoes hauled up on the beach.*

---

It was not until rural settlement began in the western Cumberland Plain, around 1791 that the colonists and Aboriginal people came face to face. Relations quickly disintegrated, and tensions over land and resources spilled over. Governor King sanctioned the shooting of Aboriginal people in a General Order made in 1801 (Kohen 1986:24). Intermittent killings on both sides continued for over 15 years, including the Appin massacre and attacks at South Creek in 1816 (Karskens 2010: 225, Kohen 1986:23).

British colonisation had a profound and devastating effect on the Aboriginal population of the Sydney region, including Darug speakers. In the early days of the colony Aboriginal people were disenfranchised from their land as the British claimed areas for settlement and agriculture. The colonists, often at the expense of the local Aboriginal groups, also claimed resources such as grassland, timber, fishing grounds and water sources. Overall the devastation of the Aboriginal culture did not come about through war with the British, but instead through disease and forced removal from traditional lands. It is thought that during the 1789 smallpox epidemic, over half of the Aboriginal people of the Sydney region died. The disease spread west to the Darug of the Cumberland Plain and north to the Hawkesbury. It may have in fact spread much further afield, over the Blue Mountains (Butlin 1983). This loss of life meant that some of the Aboriginal groups who lived away from the coastal settlement of Sydney may have disappeared entirely before Europeans could observe them, or record their clan names (Karskens 2010:452).

Into the nineteen and twentieth centuries descendants of Darug language speakers continued to live in Western Sydney along with Aboriginal people from other areas of NSW, and in the present-day, the study area falls within the area of the Deerubbin LALC.



### 3.2 Aboriginal material culture

The geological deposits in the vicinity of the Nepean and Hawkesbury Rivers contain the oldest dated archaeological deposits in the Sydney area. The oldest secured dates for Aboriginal occupation of the Sydney area are from open site PT12 and rock shelter site KII – both bordering the Nepean / Hawkesbury Rivers. Site PT12 was a deep archaeological deposit located in a Pleistocene sand deposit (Williams et al. 2012) overlooking the Hawkesbury River at 24m AHD. The Hawkesbury River bank at Pitt Town was located approximately 160m north of PT12 and at 10m AHD.

The rock shelter site KII at Shaws Creek was located on the western side of the Nepean River and approximately 11 km north of the current study area (Nanson et al. 1987). The shelter was located approximately 700 m upstream from the junction of Shaws Creek and the Nepean River. The shelter would have been inundated during flood events, but due to the arrangement of the surrounding sandstone landforms, would have been protected from high power water flows and instead would have been inundated by flood backwater. During those high water events fine silt / clay would have been deposited in the shelter (Nanson et al 1987: 76).

Radiocarbon dates from the deepest excavated unit at site KII place the earliest archaeological deposit at 14,700 +/- 250 yBP. No datable charcoal was identified during excavation at site PT12, where thermoluminescence dates demonstrated oldest occupation between 15,000 and 11,000 yBP (Williams et al. 2012). With similar dates for earliest evidence of occupation between KII and PT12, Williams et al. (2012) note that there was also a strong correlation between the artefact assemblages. The older assemblage from both sites represented a Caperatian assemblage dominated by chert/tuff, with later Holocene assemblages representing a Bondian assemblage with increased silcrete usage and backed artefact production (Williams et al. 2012: 94).

The oldest unsecured date of archaeological material in the Sydney area is from the basal gravel of the Cranebrook Formation (Nanson et al. 1987). As discussed in Section 2, both radiocarbon and thermoluminescence techniques were used to date the basal gravel to around 40,000 yBP. The argument put forward by Nanson et al. (1987) was that artefacts retrieved from the basal gravel would be associated with those dates. However, the unsecured association between the artefacts and the dated material from the basal gravel leaves the later Pleistocene dates from site KII and PT12 as the oldest secured dates in the Sydney area.

Closer to the current study area, Kohen (1984) discussed a complex of sites identified on the margins of Jamisons Creek. The 'site complex' was located approximately 3.6km south-west of the current study area. Three artefact scatters were recorded in that area, named JC/1, JC/1E and JC/LT. The site complex was located at Emu Plains and approximately one kilometre upstream from the junction of Jamisons Creek and the Nepean River, where the creek had incised through the underlying Cranebrook Formation, forming two distinct terraces.

Site JC/1 was located on the upper terrace. A surface collection of artefacts retrieved around 10,000 artefacts from 775/m<sup>2</sup> (Kohen 1984: 11). Raw materials included chert, basalt, quartz, quartzite, silcrete and silicified wood, with at least some of the materials suggested by Kohen to have originated from the Nepean River gravels. Site JC/1E was a smaller exposure of artefacts near JC/1 and also located on the upper terrace, whilst site JC/LT was located on the lower terrace. Excavation at JC/1 showed archaeological material throughout the Holocene sand deposit, with the lower indurated Pleistocene sand / clay layer archaeologically sterile (Kohen 1984: 14). A small excavation at JC/LT demonstrated a similar stratigraphic profile to JC/1.

### 3.3 Previous archaeological investigations

The following section contains a summary of previous archaeological investigations undertaken in the vicinity of the study area, where these reports are available. The locations of the studies are shown in Figure 10.

#### **Penrith Lakes Scheme (Kohen 1981)**

An archaeological survey of the proposed location of the Penrith Lakes Scheme was undertaken in the early 1980s. The project area is a sand and gravel quarry, located on the east bank of the Nepean, approximately 2km north of the current study area. The survey was not comprehensive; it excluded those areas that had been subject to gravel extraction. The survey was concentrated on the east bank of the Nepean River and both banks of Cranebrook Creek, as these locations were thought likely to have been foci of past Aboriginal occupation. The survey resulted in the identification of Aboriginal artefacts at 28 locations. Twenty-four of these locations were identified as sites, and four as isolated finds. Analysis of the results indicated that four areas within the project area were intensively used by Aborigines:

- The eastern bank of the Nepean River.
- The northern high ground, around Smith Road.
- The ridge on the east of the project area.
- Cranebrook Creek.

#### **Penrith Rugby League Club (Silcox 1987)**

Archaeological test excavations were conducted at locations on the margins of Peach Tree Creek, on the eastern side of the Nepean, approximately 840m south-west of the study area (Silcox 1987). The test excavations were conducted at sites RP3 (45-5-0539) and RP4 (45-5-0540). Artefacts were recovered from excavation at both sites, however the archaeological deposit was identified as heavily disturbed, with historical material mixed through the deposit to a depth of 25cm. Both sites were located below the 1:100 year flood level, and it was suggested that the high levels of disturbance evident were due to both the effects of flood events and farming activities.

#### **Cranebrook Escarpment (Comber Consultants May 2008)**

The subject of this report was a small section of the Penrith Lakes Scheme project area, located to the south of Church Lane, approximately 5.8km to the north of the current study area. The subject area was located on the Cranebrook Escarpment, which rises 20m above the floodplain, and included the crest of the hill and the southern slope. The investigation resulted in the identification of a surface scatter of artefacts across the whole of the subject area. For reporting purposes, this was recorded as two sites; CE1 and CE2, with respective artefact densities of 5/m<sup>2</sup> and 10/m<sup>2</sup>. Identified artefacts included flaked chert, silcrete and quartz, and one fragment of a basalt ground edge axe. The results supported the prediction that sites would be located in close proximity to water, and it was considered that the likelihood of the presence of further surface and subsurface artefacts was high.

#### **Site #45-5-2491, North Penrith (JMDCHM October 2010)**

This report was part of a series of Aboriginal and non-Indigenous heritage assessments undertaken prior to the redevelopment of the former Defence land at North Penrith, located on the north side of the railway line about 300m east of the study area. An assessment of the north eastern section of the land was undertaken prior to proposed redevelopment, in order to prepare a management plan for a known Aboriginal site, AHIMS No. 45-5-2491. The site consisted of 25-50 artefacts located on the

ground surface; and most of the site was assessed as having no to low archaeological potential although part had moderate potential. The site is located on Bringelly shale geology, but in relation to the adjacent Cranebrook Terrace, it was noted that this is a 'significant pluvial deposit which has good potential for early human occupation'.

#### **164 Station Street, Penrith (AHMS August 2012)**

This assessment addressed the property known as 164 Station Street, Penrith, approximately 650m south of the current study area. The southern part of the subject area was identified as a potential archaeological deposit, as it appeared that the upper part of the soil profile in this location remained relatively undisturbed. Although the subject area was located on the Cranebrook Formation, it was considered likely that it was within the older Penrith Unit, due to the distance from the Nepean. It was therefore considered that there was low archaeological potential in the deeper subsoil. Subsequent test excavation indicated that this subject area was located on the transition between the Richmond and Penrith Units of the Cranebrook Formation (AHMS Aug 2014: 18)

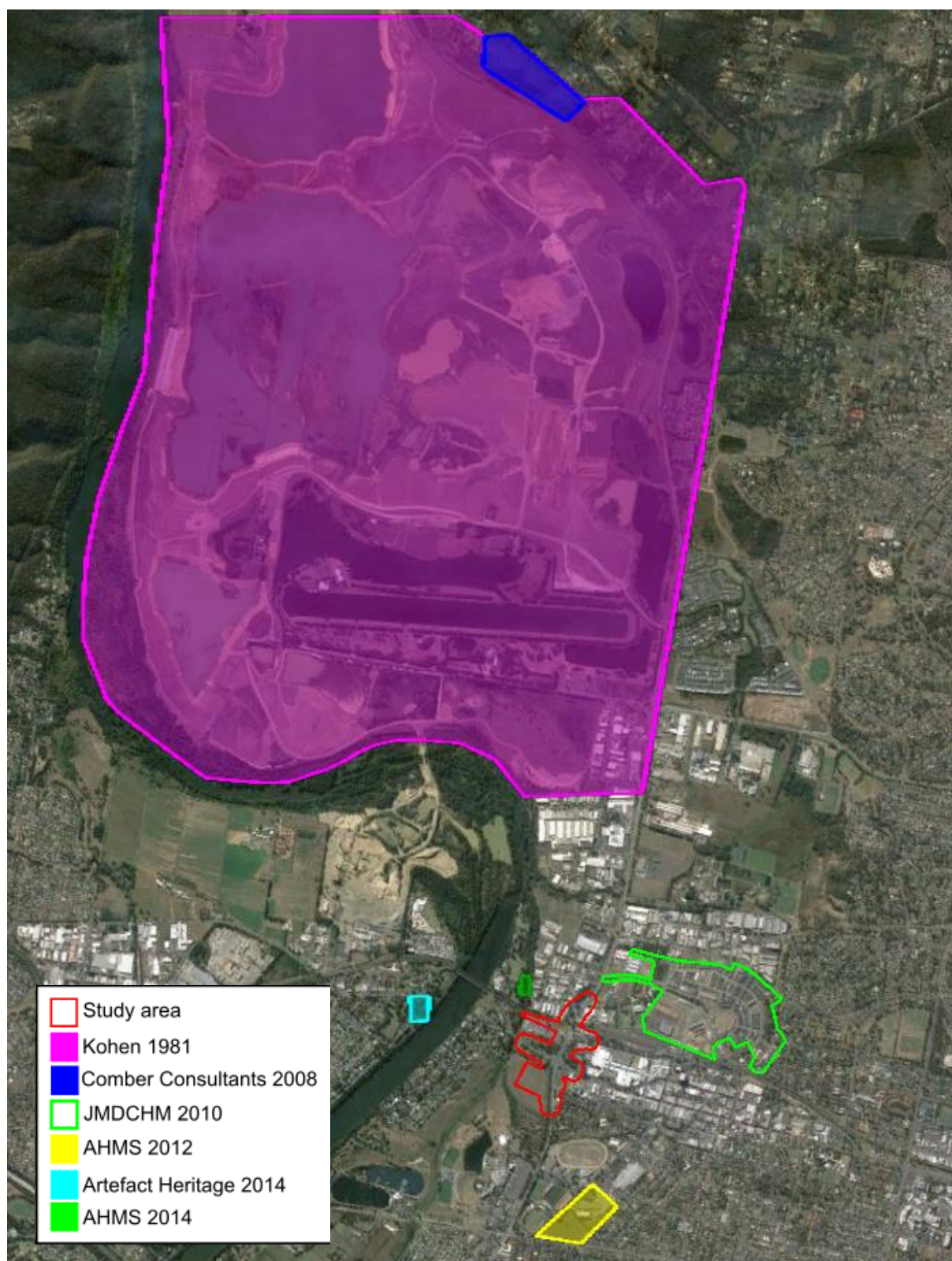
#### **Peach Tree Creek (AHMS August 2014)**

Archaeological test and salvage excavation was undertaken prior to stabilisation works along Peach Tree Creek in Penrith, approximately 80m north of the current study area. The results indicated that the subject area was within the Richmond Unit of the Cranebrook Formation. In this location, it consisted of compact silty clay loam, over 5m in depth, overlying a deposit of weakly cemented gravels. The excavation resulted in the recovery of seven artefacts. One was from the disturbed topsoil horizon. The remaining six were found at a depth of 3.5-3.7m below the ground surface, at 20.55-20.65m AHD. A tentative age for the occupation represented by the artefacts was suggested to be in the terminal Pleistocene, c20-9ka.

#### **Nepean Green Bridge (Artefact Heritage 2014)**

An Aboriginal archaeological assessment was undertaken to inform planning for the proposed Nepean River Green Bridge project. It was found that most of the subject area was below the 1:100 year flood level, and had been subject to erosion and re-deposition. This area was assessed as having low archaeological potential. However, an area of potential archaeological deposit was identified in Tench Reserve, on the eastern bank of the Nepean. This was a slightly raised landform located at the top of the bank, above the 1:100 year flood level.

**Figure 10:** Location of previous investigations in relation to the study area, outlined in red.





### 3.4 Registered Aboriginal sites

An extensive search of the Aboriginal Heritage Information System (AHIMS) database was undertaken on the 27 October 2015 for sites registered within the following coordinates:

GDA 1994 MGA 56	282797E – 289580E 6260094N – 6267325N
Number of sites	63
AHIMS Search ID	196673

The distribution of registered sites is shown in Figure 11. The search measures approximately 7.2 by 6.8 kilometres. There are 63 registered sites located within the search area. No registered sites are located within the study area.

OEH lists 20 standard site features that can be used to describe a site registered with AHIMS, and more than one feature can be used for each site. The frequency of site features is summarised in Table 3 below. A total of 66 instances of four site features has been recorded. By far the majority of sites are recorded as artefacts. This is likely to relate to the nature of past Aboriginal occupation of the area, but also to the impact of historical occupation on the archaeological record.

The closest site to the study area is Peachtree Creek PAD (AHIMS # 45-5-4361), a potential archaeological deposit located 330m north of the western extent of Great Western Highway within the study area. This relates to the archaeological deposit found during the investigation undertaken prior to bank stabilisation works along Peachtree Creek (see Section 3.3).

A second site located within the vicinity of the study area is RP5 Penrith Leagues Club (AHIMS # 45-5-0541) an artefact scatter located 370 meters south west of the southern extent of the study area. This site was identified on the ground surface, in an area of about 40 x 10-40m that had been excavated by bulldozer up to a depth of 1m. A total of 37 artefacts was recorded, found in disturbed earth and in the sections of the excavation. The raw material was largely indurated mudstone, with some chert, quartz and silcrete.

**Table 3: Frequency of site types within the search area.**

Site Feature	Frequency	Percentage (%)
Artefact	61	92.4%
Potential Archaeological Deposit	3	4.6%
Art (Pigment or Engraved)	1	1.5%
Aboriginal Ceremony and Dreaming	1	1.5%

Figure 11: Results of the AHIMS search.

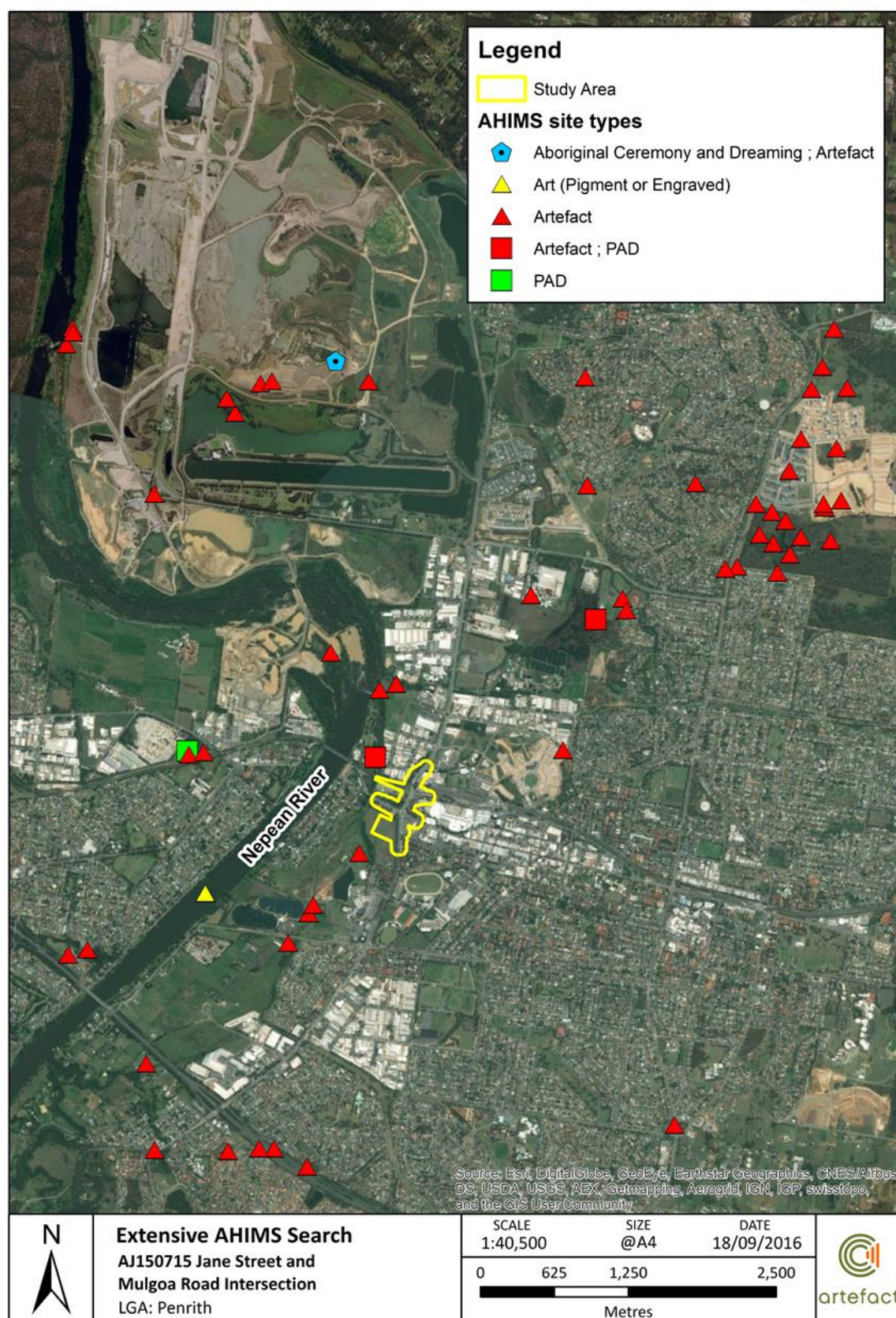




Figure 12: Location of AHIMS within immediate vicinity of study area.



## 4.0 FIELD INVESTIGATION

### 4.1 Predictions

Based on the documentary information outlined above, the following assessment of the archaeological potential of the study area is made:

- The whole of the study area is likely to have been visited by Aboriginal people in the past, due to the close proximity of water, and associated natural resources, and the availability of gravel in the beds of the Nepean River and Peachtree Creek.
- Aboriginal occupation of the study area, at least in the more recent past, is likely to have been focussed on the higher ground in the eastern part of the study area, above the 1:100 year flood level.
- Much of the archaeological evidence of past Aboriginal occupation of the study area is likely to have been removed by subsequent historical development and occupation.
- The site type most likely to be present is stone artefacts.
- Artefacts may be present on the ground surface in those parts of the site that have not been subject to the introduction of fill. These are unlikely to be apparent, due to ground cover by vegetation and hard surfaces.
- Artefacts may be present in deposits below the ground surface.
- Shallow archaeological deposits relating to the later period of past Aboriginal occupation, in the late Holocene, are likely to have been entirely removed from much of the study area.
- Deeper archaeological deposits, within the upper part of the Richmond Unit, relating to late Pleistocene occupation are likely to have been retained across most of the study area.
- Archaeological deposits in the western part of the study area are likely to comprise low densities of stone artefacts in contexts that have been disturbed by flooding.
- Archaeological deposits in the eastern part of the study area are likely to comprise higher densities of stone artefacts, and may be in contexts that retain higher levels of stratigraphic integrity.

### 4.2 Survey methodology and limitations

There are no previously recorded sites within the study area. The documentary evidence, as outlined above, indicated that it was unlikely that surface artefacts would be identified, and that the bulk of any archaeological resource would be subsurface. The main aim of the survey was therefore to confirm levels of disturbance through the study area. However, areas of ground exposure were examined for Aboriginal objects.

The survey of the study area was conducted by Fenella Atkinson and Alyce Haast (Artefact Heritage) and Steve Randall (Deerubbin LALC) on 5 November 2015. All survey units were covered on foot. Areas of exposed ground within the survey units were inspected to identify any stone artefacts or other traces of Aboriginal occupation.

A handheld Global Positioning System (GPS) was used to track the path of the surveyors, relocate previously recorded sites and to record the geographical coordinates of features within the study

area. Aerial photographs and topographic maps were carried by survey team members. A photographic record was kept of all sections of the study area. Photographs were taken to represent the landform unit, vegetation communities, objects of interest and levels of disturbance. Scales were used for photographs where appropriate.

Access was not available for private properties or the land associated with the rail corridor and as such survey in this area was limited to visual inspection from public land.

#### 4.2.1 Site definition

An Aboriginal site is generally defined as an Aboriginal object or place. An Aboriginal object is the material evidence of Aboriginal land use, such as stone tools, scarred trees or rock art. Some sites, or Aboriginal places can also be intangible and although they might not be visible, these places have cultural significance to Aboriginal people.

OEH guidelines state in regard to site definition that one or more of the following criteria must be used when recording material traces of Aboriginal land use:

- The spatial extent of the visible objects, or direct evidence of their location.
- Obvious physical boundaries where present, e.g. mound site and middens (if visibility is good), a ceremonial ground.
- Identification by the Aboriginal community on the basis of cultural information.

### 4.3 Survey results

The survey was divided into five survey units (Figure 13). In general, effective coverage was low (Table 4). Most of the ground in the study area is covered with hard surfaces, such as road and carpark paving; fill, such as the railway embankment and tennis courts; or dense grass, in Woodriff Gardens and in the vacant land to the south of High Street.

**Table 4: Effective survey coverage.**

Survey Unit	Landform	Survey unit area (m <sup>2</sup> )	Visibility (%)	Exposure (%)	Effective Survey Coverage (m <sup>2</sup> )	Effective Coverage (%)
1	Flat, Slope	20798	5	5	51.9	0.25%
2	Flat, Slope	35372	5	1	17.7	0.05%
3	Flat, Slope, Drainage Line	36746	1	1	3.7	0.01%
4	Flat, Slope	72960	1	1	7.2	0.01%
5	Flat, Drainage Line	39567	1	1	3.9	0.01%



**Table 5: Landform summary.**

Landform	Landform Area (m <sup>2</sup> )	Area Effectively Surveyed (m <sup>2</sup> )	Proportion of landform effectively surveyed (%)	Number of sites	Number of artefacts or features
Flat	163188	33.2	0.02%	0	0
Slope	36998	50.8	0.01%	0	0
Drainage Line	5257	5.2	0.01%	0	0

**Survey Unit 1**

Survey Unit 1 consists of the land surrounding the Main Western Line rail corridor and adjacent land, to the west of Castlereagh Road and to the north of Woodriff Gardens Tennis Centre. The railway line itself runs along an embankment formed of introduced fill. The line crosses Peachtree Creek over a concrete bridge, and the banks of the Creek appear to have been heavily modified in this location. The area to the north of the rail line is occupied by warehouses, with most of the ground covered with hard surfaces. The area to the south of the rail line includes an open grassed space and two tennis courts. The open area is crossed by an overhead transmission line, and one or more underground services. It was wet underfoot, with pooling water, at the time of the survey. The area of the tennis courts has been built up by the introduction of fill. Visibility and exposure was generally low with some small exposures related to tracks and waterlogged ground surfaces.

**Survey Unit 2**

Survey Unit 2 consists of the Great Western Highway, to the west of Castlereagh Road, and the properties to the north and south. The landscape in this area has been modified by construction of the road, and multiple residential and commercial buildings to the south of the Highway. To the north of the Highway is an area of open park, Woodriff Gardens. Vegetation in this location consists of a combination of small trees and shrubbery and largely consists of introduced plant species. Earthworks have been undertaken in this Survey Unit for drainage purposes, taking stormwater into Peachtree Creek. Visibility in the survey unit was extremely low based on heavy grass cover in undeveloped areas. Survey was limited in this unit by several residential properties in which access was restricted.

**Survey Unit 3**

Survey Unit 3 consists of the Castlereagh and Mulgoa Roads road corridor between Museum Drive and Union Road. The survey unit consists almost entirely of bituminised roads with traffic lights at the intersections to Jane Street and the Great Western Highway indicating significant earthworks relating to the road network. The northern extent of the survey unit includes the underpass associated with the railway line. Examination of the exposed soil profile within the underpass revealed that construction of the underpass had involved substantial excavation into the subsoil. In the north of the Survey Unit, on the western side of Castlereagh Road, is a large stormwater detention basin.

**Survey Unit 4**

Survey Unit 4 consisted of that part of the study area to the east of Castlereagh Road. Most of this Unit is covered with hard surfaces. To the north of the rail line is a light industrial area with associated carparking. To the south is the Civic Centre and three areas of carparking. The area

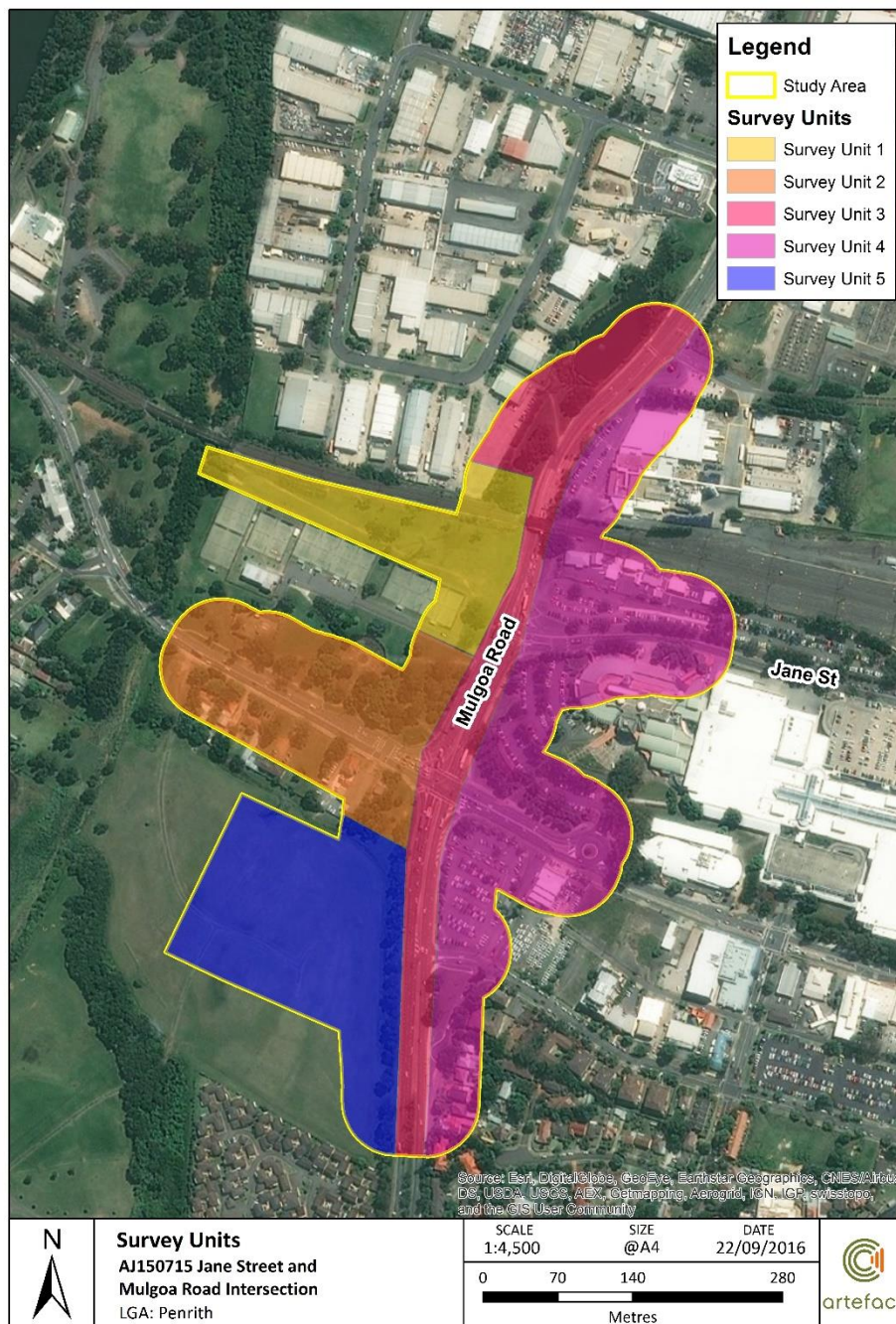


surrounding the Civic Centre carpark has been landscaped and planted, which appears to have involved introduction of fill. Visibility and exposure in this Survey Unit was extremely low.

### Survey Unit 5

Survey Unit 5 consists of the open field to the west of Mulgoa Road and to the south of the Great Western Highway. The Unit consists of a flat grassed area with an open drainage channel running along the northern and eastern corners sides. The Unit is crossed by an overhead transmission line. Visibility was low given the dense grass cover within the area. Exposures were limited to vehicle tracks running along the western extent of the survey Unit. With exception of the drainage line the landform appears largely unmodified.

**Figure 13: Survey units.**





**Plate 1: Western view of Survey Unit 1.**



**Plate 2: Western extent of Survey Unit 1.**



**Plate 3: Exposures located in Survey Unit 1.**



**Plate 4: View of embankment related to train line, northern aspect.**



**Plate 5: Eastern view of Survey Unit 2 from Peachtree Creek Bridge.**



**Plate 6: View of Peachtree Creek to the south of the bridge, southern aspect.**



**Plate 7: Southern aspect of Survey Unit 2 highlighting level of earth movement.**



**Plate 8: Eastern view of Survey Unit.**



**Plate 9: Great Western Highway/ Mulgoa Street intersection, eastern aspect.**



**Plate 10: Jane Street / Castlereagh Road intersection, western aspect.**



**Plate 11: Castlereagh Road, northern aspect.**



**Plate 12: Castlereagh Road underpass, northern aspect.**





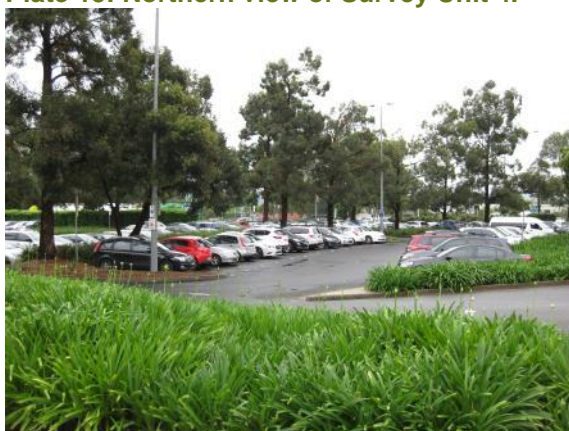
**Plate 13: Western view of Survey Unit 4.**



**Plate 14: Western view of Survey Unit 4.**



**Plate 15: Northern view of Survey Unit 4.**



**Plate 16: Eastern view of Survey Unit 4.**



**Plate 17: Eastern view of Survey Unit 5.**



**Plate 18: Southern view of Survey Unit 5 with vehicle track.**





**Plate 19: Southern view of Survey Unit 5.**



**Plate 20: Western view of Survey Unit 5.**



## 5.0 SIGNIFICANCE ASSESSMENT

### 5.1 Aboriginal archaeological potential

The results of the investigation indicate that the immediate region of the study area would have been a focus of past Aboriginal occupation. This occupation may date back as far as the late Pleistocene period. The eastern part of the study area, being at a slightly higher elevation and less affected by flooding, may have been favoured over the western part.

There are no registered Aboriginal objects or Places within the study area, and the investigation did not result in the identification of any Aboriginal objects. It is likely that the historical development and occupation of the study area has resulted in destruction of some components of the archaeological evidence of past Aboriginal occupation. In one location, at the Castlereagh Road rail underpass, it appears that the upper soil profile has been entirely removed, and this location is considered to have no archaeological potential. This is likely also to be the case in the locations of the Civic Centre (south of Jane Street and east of Castlereagh Street), which is understood to have a basement; and the stormwater basin (west of Castlereagh Street and north of the Main Western Line), construction of which has involved deep excavation. It may also be the case in the vicinity of the rail bridge over Peachtree Creek, and the Mulgoa Road realignment where it appears that deep excavation has been undertaken. Construction of the other roads in the study area does not appear to have involved such deep excavation.

However, the soil profile in the locality of the study area is known to be particularly deep. The results of the geotechnical investigation indicate that alluvium (equivalent to the upper part of the Richmond Unit) is present to a depth of greater than 2.8m within the study area. It does not appear that the ground disturbance across the remainder of the study area has affected the full depth of the upper soil profile. It is therefore considered likely that archaeological remains will be present within the study area. These remains are likely to consist largely, or entirely, of stone artefacts. Densities are likely to be lower, and the context more disturbed, in the western part of the study area. The evidence could date back to the late Pleistocene period. Evidence from the later Holocene occupation of the study area is likely to have been subject to greater levels of historical disturbance, being higher in the profile.

An area of potential archaeological deposit (PAD) has therefore been identified across most of the study area (Figure 14). It is likely that the PAD is not continuous across the whole of this area, as deep excavation, for instance for subsurface services, will have removed the deposit from some discrete areas. In addition, the nature of the PAD has been assessed based on documentary evidence only, as no surface expressions of the PAD were observed and no subsurface investigation was undertaken.

Archaeological test excavation would be required to confirm the presence of the PAD, and provide information with which to make a more definite assessment of the nature and significance of the PAD. Given the expected depth of the proposed impact (see Section 6.1), it is considered that test excavation of that part of the PAD to be affected could be undertaken in accordance with the methodology outlined in the OEH *Code of practice for archaeological investigation of Aboriginal objects in New South Wales* (DECCW 2010). The test excavation methodology would be designed to focus on those parts of the PAD within the development footprint that have been subject to lower levels of historical disturbance. The results of the investigation would inform a re-assessment of the significance of the PAD and a refined impact assessment.

## 5.2 Significance assessment criteria

An assessment of the cultural heritage significance of an item or place is required in order to form the basis of its management. The Office of Environment and Heritage (2011) provides guidelines for heritage assessment with reference to the Burra Charter (Australia ICOMOS 2013) and the Heritage Office guidelines (2001). The assessment is made in relation to four values or criteria (Table 6). In relation to each of the criteria, the significance of the subject area should be ranked as high, moderate or low.

It is important to note that heritage significance is a dynamic value.

Table 6: Heritage significance criteria.

Criterion	Description
Social	The spiritual, traditional, historical or contemporary associations and attachments the place or area has for Aboriginal people. Social or cultural value is how people express their connection with a place and the meaning that place has for them.
	Does the subject area have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons?
Historical	The associations of a place with a historically important person, event, phase or activity in an Aboriginal community. Historic places do not always have physical evidence of their historical importance (such as structures, planted vegetation or landscape modifications). They may have 'shared' historic values with other (non-Aboriginal) communities.
	Is the subject area important to the cultural or natural history of the local area and/or region and/or state.
Scientific (archaeological)	This refers to the importance of a landscape, area, place or object because of its rarity, representativeness and the extent to which it may contribute to further understanding and information.
	Does the subject area have potential to yield information that will contribute to an understanding of the cultural or natural history of the local area and/or region and/or state?
Aesthetic	This refers to the sensory, scenic, architectural and creative aspects of the place. It is often linked with the social values. It may consider form, scale, colour, texture and material of the fabric or landscape, and the smell and sounds associated with the place and its use.
	Is the subject area important in demonstrating aesthetic characteristics in the local area and/or region and/or state?

### 5.3 Significance assessment

The study area has the potential to contain archaeological evidence deriving from the Aboriginal occupation of the region from as far back as the late Pleistocene period. The evidence may not be present in particularly high densities, and is likely to have been subject to disturbance from the action of the floodwaters of the Nepean, and from later historical landuse. However, evidence dating from this early period is extremely rare on the Cumberland Plain, and the information that it can provide is therefore of high significance.

There is some suggestion that the Hawkesbury / Nepean may have functioned as a refuge for Aboriginal people during the harsh conditions of the Last Glacial Maximum. If this is the case, evidence from this period may shed light on Aboriginal responses to this important historical phase. Although the area has been subject to substantial historical development, in places it is still possible to appreciate the natural landforms and watercourses, and archaeological evidence in this context may be considered to have aesthetic value.

In addition, the subject area is located within the Cranebrook Formation, the archaeological investigation of which has been a key element of the development of the discipline in this region since the 1970s. The archaeological evidence has the potential to contribute to this discussion.

The social significance of the study area is a matter for the Aboriginal community to assess. However, in general, it can be noted that elements of the natural environment such as watercourses and archaeological evidence are considered to be of significance, as they provide tangible connections to the lives of their ancestors.

The above assessment of significance is based on documentary and surface evidence only. Subsurface investigation would be required to confirm the presence of the potential archaeological remains, and re-assess the nature and significance of these remains.



Figure 14: Tentative extent of the identified potential archaeological deposit, shaded yellow.



## 6.0 IMPACT ASSESSMENT

### 6.1 Proposed development

Roads and Maritime proposes to upgrade the section of Castlereagh Street between Museum Drive and Union Road, including the intersections with Jane and High Streets (Figure 15). The upgrade is intended to improve traffic flow and travel times and develop infrastructure for future expansion. The proposed development includes the following components:

- Additional northbound lane on Mulgoa Road and Castlereagh Road.
- Additional southbound lane on Mulgoa Road and Castlereagh Road.
- Longer left turn lane along Mulgoa Road for vehicles turning onto the Great Western highway.
- Widening the existing rail underpass to allow three lanes of traffic in each direction on Castlereagh road and a left turn on to Jane Street.
- Upgrading the Mulgoa Road and High Street intersection, including construction of turning lanes.
- Upgrading the T-intersection of Jane Street and Castlereagh Road, including construction of turning lanes.
- Possible relocation of an underground service, presently running along the southern side of the Main Western Line, to the northern side of the line.
- Three temporary construction compounds: on the western side of Mulgoa Road, opposite the Union Road intersection; on the western side of Castlereagh Road, between the Main Western Line and the Woodriff Garden Tennis Centre; on the eastern side of Castlereagh Road, to the north of the Main Western Line.

### 6.2 Potential Aboriginal archaeological impact

The exact depth and extent of excavation required for the proposed development is not presently known. It is expected that, in general, a maximum excavation depth of 1m will be required. Deeper excavation, up to c.3.5m will be required in the vicinity of the Castlereagh Road rail underpass. The information presently available indicates the following potential archaeological impact:

- Excavation in the immediate vicinity of the Castlereagh Road underpass, the stormwater detention basin and the Civic Centre is unlikely to result in archaeological impact. It is probable that previous excavation has removed any archaeological deposit from these locations.
- Excavation alongside the existing roads is likely to result in removal of archaeological deposits. The extent of impact will depend on the depth of excavation, but it is likely that only the upper part of the potential archaeological deposit (that is, the alluvium overlying gravel) will be removed from these locations.
- Use of compound locations may result in damage to archaeological deposits. This is likely to be limited to the upper soil profile, and will leave deeper archaeological deposits unaffected. Compaction of archaeological deposit is also considered by OEH to constitute harm.

Figure 16 shows those locations where excavation for the proposed development may affect natural soil profiles. This mapping is approximate, as it is based on limited data regarding the present sub-surface deposits. Yellow shading indicates those areas where the depth of excavation required for the works is likely to extend into the natural soil profile. The geotechnical investigation indicated additional areas, within the current road pavement, where alluvial deposits were present at a shallow depth. However, this is likely to be incorrect, as construction of the road pavement would have involved substantial excavation in order to lay the sub-base or foundation of the road.

Blue shading in Figure 16 indicates the three proposed compound locations. The northern compound, to the east of Castlereagh Road, will use the existing hard stand, and is unlikely to involve ground disturbance. Use of the other two compounds is likely to involve disturbance to the upper part of the soil profile, and any archaeological deposit contained therein. It should be possible to introduce measures to protect the ground surface and avoid or reduce this type of impact. However, OEH considers that introduction of fill to an area that is likely to contain Aboriginal objects constitutes harm to those objects. If further investigation of the PAD confirms that Aboriginal objects are present, then use of the compounds will be considered to be an impact.

The exact nature of the PAD within the study area is presently unknown, and the potential for the presence of Aboriginal objects has not been confirmed. In addition, the exact extent of previous ground disturbance within the study area is also unknown. Further investigation, in the form of archaeological test excavation, would be required for a more accurate assessment of the potential heritage impact.

Based on the information presently available, the assessed impact will affect archaeological deposits within the Richmond Unit of the Cranebrook Formation. It will affect only a very small area of the broader Richmond Unit, and within that, only the upper part of the deep alluvial profile. However, although the Richmond Unit covers a large area, it has already been subject to extensive impact through quarrying, in the area of the Penrith Lakes Scheme, and the urban development of Penrith. Expansion and intensification of development in this area is likely to continue, and cumulative impact on this deposit is therefore a concern.







**Figure 16:** An estimate of the locations where the proposed development will involve excavation into the natural soil profile, shaded yellow, and the compound area, shaded blue.



## 7.0 MANAGEMENT AND MITIGATION MEASURES

### 7.1 Guiding principles

The overall guiding principle for cultural heritage management is that, where possible, Aboriginal sites should be conserved. If conservation is not practicable, measures should be taken to mitigate against impacts to Aboriginal sites. The nature of the mitigation measures recommended is based on the assessed significance of the site or sites.

Strategies for the management of Aboriginal heritage during works which have the potential to impact this heritage are generally developed in conjunction with the local Aboriginal community. Mitigation measures recommended vary depending on the assessment of archaeological significance of the Aboriginal site which is based on its research potential, rarity, representativeness and educational value. In general the significance of a site would involve the following mitigation measures:

- Low archaeological significance – Conservation where possible. An AHIP would be required to impact the site before works can commence.
- Moderate archaeological significance – Conservation where possible. If conservation was not practicable further archaeological investigation would be required such as salvage excavations or surface collection under an AHIP.
- High archaeological significance – Conservation as a priority. An AHIP would be required only if other practical alternatives have been discounted. Conditions of this AHIP would depend on the nature of the site, but may include removal and preservation of scarred trees, or comprehensive salvage excavations.

The PAD within the study area has been assessed as having moderate archaeological potential and significance.

### 7.2 Management and mitigation recommendations

The following recommendations were based on consideration of:

- Statutory requirements under the *National Parks and Wildlife Act 1974*.
- The results of the background research, site survey and assessment.
- The views of Deerubbin LALC [not yet received].
- The likely impacts of the proposed development.

It is recommended that:

- Finalisation of the design of the proposed development should endeavour to minimise the extent of excavation required.
- Site compounds should be located and/or managed so as to avoid ground disturbance.
- Formal Aboriginal community consultation and an Aboriginal cultural heritage assessment should be undertaken, in accordance with:
  - Stage 3 of the *Procedure for Aboriginal cultural heritage consultation and investigation* (RMS 2011).

- *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010).
- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011).
- *Code of practice for archaeological investigation of Aboriginal objects in New South Wales* (DECCW 2010).
- The investigation undertaken for the assessment (Stage 3 PACHCI) should include archaeological test excavation, in accordance with the *Code of practice for archaeological investigations of Aboriginal objects in New South Wales* (DECCW 2010).

Depending on the results of the test excavation, it may be necessary to apply for an Aboriginal Heritage Impact Permit to allow harm to Aboriginal objects as a result of the development, and any associated mitigation measures.

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## APPENDIX 1: RESULTS OF AHIMS SEARCH



# AHIMS Web Services (AWS)

## Extensive search - Site list report

Purchase Order/Reference : AJ150715

Client Service ID : 196673

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2416	L-1;Penrith Lakeside Village;	AGD	56	286800	6264740	Open site	Valid	Artefact : -	Open Camp Site	102450
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
45-5-3331	ADI/FF-30	AGD	56	288835	6265442	Open site	Valid	Artefact : 1		99635,102155, 102450,10257 3
	<b>Contact</b> T Russell	<b>Recorders</b>						<b>Permits</b>	3057	
45-5-3332	ADI/FF-31	AGD	56	288950	6265366	Open site	Valid	Artefact : 19		99635,102155, 102573
	<b>Contact</b> T Russell	<b>Recorders</b>						<b>Permits</b>		
45-5-3317	Western Sydney 5	GDA	56	287679	6264900	Open site	Valid	Artefact : 1		100554,10245 0
	<b>Contact</b> Searle	<b>Recorders</b>						<b>Permits</b>		
45-5-3318	Western Sydney 6	GDA	56	287710	6264801	Open site	Valid	Artefact : 5		100554,10245 0
	<b>Contact</b> Searle	<b>Recorders</b>						<b>Permits</b>		
45-5-3319	Western Sydney 7 and PAD	GDA	56	287450	6264725	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : -		100554,10245 0
	<b>Contact</b> Searle	<b>Recorders</b>						<b>Permits</b>		
45-5-1025	ADI-24;	AGD	56	288540	6264980	Open site	Valid	Artefact : -	Isolated Find	102155,10245 0
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
45-5-3904	EPRSY 3(PAD)	GDA	56	284000	6263615	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>	3485	
45-5-1026	ADI-25;	AGD	56	288880	6264930	Open site	Valid	Artefact : -	Isolated Find	102155,10245 0,102573
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
45-5-1027	ADI-26	AGD	56	288986	6265084	Open site	Valid	Artefact : -	Isolated Find	99635,102155, 102450,10257 3,102577
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
45-5-1028	ADI-27	AGD	56	289080	6265230	Open site	Valid	Artefact : -	Open Camp Site	102155,10245 0,102577
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
45-5-1033	ADI-32;	AGD	56	289170	6266480	Open site	Valid	Artefact : -	Open Camp Site	102155,10245 0,102573
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>	3057	
45-5-1034	ADI-33;	AGD	56	289470	6266490	Open site	Valid	Artefact : -	Open Camp Site	102450

Report generated by AHIMS Web Service on 27/10/2015 for Alyce Haast for the following area at Datum :GDA, Zone : 56, Eastings : 282797 - 289580, Northings : 6260094 - 6267325 with a Buffer of 0 meters. Additional Info : Stage 2 PAHCHI. Number of Aboriginal sites and Aboriginal objects found is 63

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# AHIMS Web Services (AWS)

## Extensive search - Site list report

Purchase Order/Reference : AJ150715

Client Service ID : 196673

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-1036	ADI-35;	AGD	56	289380	6265980	Open site	Valid	Artefact : -	Isolated Find	102450
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-1039	ADI-38;	AGD	56	289420	6265540	Open site	Valid	Artefact : -	Isolated Find	102450
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-1040	ADI-39;	AGD	56	289280	6265480	Open site	Valid	Artefact : -	Isolated Find	102155,10245 0,102573
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-1041	ADI-40;	AGD	56	289270	6265510	Open site	Valid	Artefact : -	Open Camp Site	102155,10245 0,102573
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-1042	ADI-41;	AGD	56	288980	6265790	Open site	Valid	Artefact : -	Isolated Find	102155,10245 0,102573
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>	3057	
45-5-1050	ADI-49;	AGD	56	289360	6266990	Open site	Valid	Artefact : -	Open Camp Site	102450,10257 7
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-1056	ADI-55;	AGD	56	289080	6266060	Open site	Valid	Artefact : -	Open Camp Site	102155,10245 0,102573
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-1057	ADI-56;	AGD	56	289260	6266670	Open site	Valid	Artefact : -	Open Camp Site	102155,10245 0,102573
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>	3057	
45-5-1074	Clyburn Avenue;	AGD	56	284630	6260060	Open site	Valid	Artefact : -	Open Camp Site	103155,10336 0
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-2414	L1 (Penrith Lakeside Village)	AGD	56	286800	6264740	Open site	Valid	Artefact : -	Open Camp Site	102450
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>	939,1694,1803	
45-5-0418	SP 20 South Penrith	AGD	56	283620	6260050	Open site	Valid	Artefact : -	Open Camp Site	256,1018,1031 55,103360
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-0318	Penrith Lakes 4	GDA	56	283031	6267186	Open site	Valid	Artefact : -	Open Camp Site	256,260,526,10 18
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>	3891	
45-5-0326	Penrith Lakes 15	AGD	56	285428	6266546	Open site	Valid	Artefact : -	Open Camp Site	260,526,1018,1 02450
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>	28	
45-5-0327	Penrith Lakes 16	AGD	56	285428	6266546	Open site	Valid	Artefact : -	Open Camp Site	260,526,1018,1 02450

Report generated by AHIMS Web Service on 27/10/2015 for Alyce Haast for the following area at Datum :GDA, Zone : 56, Eastings : 282797 - 289580, Northings : 6260094 - 6267325 with a Buffer of 0 meters. Additional Info : Stage 2 PAHCHI. Number of Aboriginal sites and Aboriginal objects found is 63

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# AHIMS Web Services (AWS)

## Extensive search - Site list report

Purchase Order/Reference : AJ150715

Client Service ID : 196673

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	<u>Contact</u>	<u>Recorders</u>	Jim Kohen					<u>Permits</u>		
45-5-0328	Penrith Lakes 17	AGD	56	283617	6265596	Open site	Valid	Artefact : -	Open Camp Site	260,526,1018
	<u>Contact</u>	<u>Recorders</u>	Jim Kohen					<u>Permits</u>	28	
45-5-0329	Penrith Lakes 18	AGD	56	283617	6265596	Open site	Valid	Artefact : -	Open Camp Site	260,526,1018
	<u>Contact</u>	<u>Recorders</u>	Jim Kohen					<u>Permits</u>	28	
45-5-0332	Penrith Lakes 21	AGD	56	284514	6266528	Open site	Valid	Artefact : -	Open Camp Site	260,526,1018,1 02450
	<u>Contact</u>	<u>Recorders</u>	Jim Kohen					<u>Permits</u>	28	
45-5-0334	Penrith Lakes 24	AGD	56	287257	6266581	Open site	Valid	Artefact : -	Open Camp Site	260,526,1018,1 02450
	<u>Contact</u>	<u>Recorders</u>	Jim Kohen					<u>Permits</u>		
45-5-0335	Penrith Lakes 26	AGD	56	287274	6265667	Open site	Valid	Artefact : -	Open Camp Site	260,526,1018,1 02450
	<u>Contact</u>	<u>Recorders</u>	Jim Kohen					<u>Permits</u>		
45-5-0336	Penrith Lakes 27	AGD	56	288189	6265685	Open site	Valid	Artefact : -	Open Camp Site	260,526,1018,1 02450
	<u>Contact</u>	<u>Recorders</u>	Jim Kohen					<u>Permits</u>		
45-5-0340	Penrith Regional Art Gallery	AGD	56	284048	6262220	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	260,1018,1031 55,103360
	<u>Contact</u>	<u>Recorders</u>	Charles.D Power					<u>Permits</u>		
45-5-0366	Emu Plains Emu Plains 4	AGD	56	285107	6264253	Open site	Valid	Artefact : -	Open Camp Site	1018,102450,1 03155,103360
	<u>Contact</u>	<u>Recorders</u>	Jim Kohen					<u>Permits</u>		
45-5-1023	ADI-22;	AGD	56	289330	6265200	Open site	Valid	Artefact : -	Open Camp Site	102155,10257 3,102577
	<u>Contact</u>	<u>Recorders</u>	Doctor.Jo McDonald					<u>Permits</u>	3057	
45-5-1024	ADI-23	AGD	56	288700	6265510	Open site	Valid	Artefact : -	Isolated Find	102155,10245 0,102573
	<u>Contact</u>	<u>Recorders</u>	Doctor.Jo McDonald,Ms.Jenni Bate					<u>Permits</u>		
45-5-0538	RP#2 Regentville	AGD	56	283550	6260780	Open site	Valid	Artefact : -	Open Camp Site	1018,103155,1 03360
	<u>Contact</u>	<u>Recorders</u>	Elizabeth Rich					<u>Permits</u>		
45-5-0539	RP3 Peach Tree Creek	AGD	56	284920	6262050	Open site	Valid	Artefact : -	Open Camp Site	1018,103155,1 03360
	<u>Contact</u>	<u>Recorders</u>	Elizabeth Rich					<u>Permits</u>		
45-5-0540	RP4 Peach Tree Creek	AGD	56	284960	6262120	Open site	Valid	Artefact : -	Open Camp Site	103155,10336 0
	<u>Contact</u>	<u>Recorders</u>	Elizabeth Rich					<u>Permits</u>		

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# AHIMS Web Services (AWS)

## Extensive search - Site list report

Purchase Order/Reference : AJ150715

Client Service ID : 196673

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-0541	RP5 Penrith Leagues Club	AGD	56	285350	6262560	Open site	Valid	Artefact : -	Open Camp Site	102450,10315 5,103360
	<u>Contact</u>									
	<u>Recorders</u>		Elizabeth Rich					<u>Permits</u>		
45-5-0281	Cranebrook Creek, CC/1	AGD	56	285150	6266723	Open site	Valid	Aboriginal Ceremony and Dreaming : -, Artefact : -		260,526,1018,1 02450
	<u>Contact</u>		Jim Kohen					<u>Permits</u>	28	
45-5-0282	Upper Castlereagh	GDA	56	282979	6267050	Open site	Valid	Artefact : -	Open Camp Site	260,1018
	<u>Contact</u>		Jim Kohen					<u>Permits</u>	3891	
45-5-0287	Emu Plains (Jamisons Creek)	AGD	56	283052	6261743	Open site	Partially Destroyed	Artefact : -	Open Camp Site	260,1018,1031 55,103360
	<u>Contact</u>		Jim Kohen					<u>Permits</u>	1423,1842	
45-5-0290	The Island	AGD	56	285661	6263989	Open site	Valid	Artefact : -	Open Camp Site	260,526,1018,1 02450,103155, 103360
	<u>Contact</u>		Jim Kohen					<u>Permits</u>		
45-5-0305	SP 7;	AGD	56	284240	6260040	Open site	Valid	Artefact : -	Open Camp Site	256,260,1018,1 03155,103360
	<u>Contact</u>		Mary Dallas Consulting Archaeologists					<u>Permits</u>	173	
45-5-0589	Penrith Lakes 29	AGD	56	284300	6266280	Open site	Valid	Artefact : -	Open Camp Site	1064
	<u>Contact</u>		Jim Kohen					<u>Permits</u>	28	
45-5-0590	Penrith Lakes 31	AGD	56	284610	6266550	Open site	Valid	Artefact : -	Open Camp Site	1064,102450
	<u>Contact</u>		Jim Kohen					<u>Permits</u>	28	
45-5-0591	Penrith Lakes 30	AGD	56	284230	6266400	Open site	Valid	Artefact : -	Open Camp Site	1064,102450
	<u>Contact</u>		Jim Kohen					<u>Permits</u>	28	
45-5-0790	Jamison_and Blaikie Roads;	AGD	56	284750	6261800	Open site	Valid	Artefact : -	Open Camp Site	1633,103155,1 03360
	<u>Contact</u>		Pam Dean-Jones					<u>Permits</u>		
45-5-0495	Jamisons Creek JC/2 Penrith	AGD	56	282890	6261700	Open site	Valid	Artefact : -	Open Camp Site	1018,103155,1 03360
	<u>Contact</u>		Jim Kohen					<u>Permits</u>		
45-5-0522	Penrith P/1	AGD	56	285520	6263940	Open site	Valid	Artefact : -	Open Camp Site	1018,102450,1 03155,103360
	<u>Contact</u>		Jim Kohen					<u>Permits</u>		
45-5-0530	Upper Castlereagh, UC/1	GDA	56	283035	6267149	Open site	Valid	Artefact : -	Open Camp Site	1018
	<u>Contact</u>		Jim Kohen					<u>Permits</u>	3891	
45-5-3598	ADI: FF/30 (Springwood)	GDA	56	288835	6265442	Open site	Valid	Artefact : 1		102155,10245 0

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# AHIMS Web Services (AWS)

## Extensive search - Site list report

Purchase Order/Reference : AJ150715

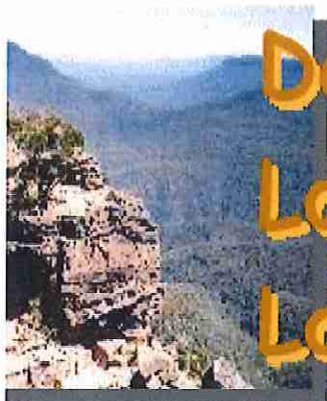
Client Service ID : 196673

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	<u>Contact</u>	<u>Recorders</u>	Jo McDonald Cultural Heritage Management					<u>Permits</u>		
45-5-3599	ADI: FF/31 (Springwood)	GDA	56	288950	6265366	Open site	Valid	Artefact : 19		102450
	<u>Contact</u>	<u>Recorders</u>	Jo McDonald Cultural Heritage Management					<u>Permits</u>		
45-5-4302	TNR-3	GDA	56	288545	6265150	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Doctor.Jo McDonald					<u>Permits</u>	3619	
45-5-4569	M4-19B Regentville	GDA	56	284607	6260253	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Helen Brayshaw					<u>Permits</u>		
45-5-4570	M4-20B Clyburn Avenue	GDA	56	285012	6260099	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Helen Brayshaw					<u>Permits</u>		
45-5-2491	Coreeen Ave 1	AGD	56	287070	6263430	Open site	Partially Destroyed	Artefact : -	Open Camp Site	98259,102450,103155,103360
	<u>Contact</u>	<u>Recorders</u>	Helen Brayshaw,Tony Kondek					<u>Permits</u>	1367	
45-5-2484	Northern Road	AGD	56	288013	6260261	Open site	Valid	Artefact : -	Isolated Find	
	<u>Contact</u>	<u>Recorders</u>	Ms.Claire Everett					<u>Permits</u>		
45-5-3816	Emu Plains Rail Stabling Yards	GDA	56	284015	6263583	Open site	Destroyed	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Mr.Alan Williams,Mr.Alan Williams					<u>Permits</u>	3485	
45-5-3817	Emu Plains Rail Stabling Yards1	GDA	56	284138	6263601	Open site	Destroyed	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Mr.Alan Williams,Mr.Alan Williams					<u>Permits</u>	3282	
45-5-4361	Peachtree Creek PAD	GDA	56	285590	6263560	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) :-		103360
	<u>Contact</u>	<u>Recorders</u>	Mr.Oliver Brown					<u>Permits</u>	3664,3688	

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## APPENDIX 2: DEERUBBIN LOCAL ABORIGINAL LAND COUNCIL REPORT



# Deerubbin Local Aboriginal Land Council

Level 1, Suite 3  
291-295 High Street  
PENRITH NSW 2750  
PO Box 40  
Penrith BC  
NSW 2751 AUSTRALIA

ABN: 41 303 129 586  
T: (02) 4724 5600  
F: (02) 4722 9713  
E: [Staff@deerubbin.org.au](mailto:Staff@deerubbin.org.au)  
W: <http://www.deerubbin.org.au>

Roads and Maritime Services  
Level 11, 27-31 Argyle Street  
PARRAMATTA NSW 2150

Our Ref: 2626

22 December 2015

**SUBJECT: PROTECTION OF ABORIGINAL CULTURAL HERITAGE**  
**Upgrade to Jane Street, Castlereagh Road, Mulgoa Road**  
**And Great Western Highway, Penrith**

**Attention: Mark Lester, Aboriginal Cultural Heritage Officer**

A representative of the Deerubbin Local Aboriginal Land Council inspected the proposed upgrade on the abovementioned streets & road in Penrith on Thursday, 5 November 2015. An Aboriginal cultural heritage assessment was undertaken to evaluate the likely impact the proposed works compound has on the cultural heritage of the land.

Although no Aboriginal cultural material (in the form of stone artefacts) were located during the assessment the areas near Peachtree Creek and Mulgoa Road that has potential to contain sub surface stone artefacts.

Deerubbin Local Aboriginal Land Council therefore recommends further investigation be undertaken before compounds & road works.

Yours Faithfully,

(Steven Randall  
Aboriginal Cultural Heritage Officer)

C.c. Miranda Morton – Office of Environment & Heritage

C.c. Fenella Atkinson – Artefact Heritage





artefact

Artefact Heritage

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Pyrmont NSW 2009  
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[www.rms.nsw.gov.au/JaneStreetMulgoaRoad](http://www.rms.nsw.gov.au/JaneStreetMulgoaRoad)



1800 733 084



Jane Street and Mulgoa Road Upgrade  
Roads and Maritime Services  
PO Box 973  
Parramatta CBD NSW 2124

October 2016  
RMS 16.529